

REMARKS

Claims 1-3, 5, and 6 are pending, of which claim 5 is withdrawn.

Claims 1-3 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 3,321,765 to Peters et al. ("Peters").

Applicants traverse.

The Office Action acknowledges that Peters is *silent* about the range of resin/filler volume ratio, the foamed layer having a dielectric constant of 1.5 or more, and the pre-expanded beads having been uniformly classified by gravity separation to a range of specified expansion characteristics. As for these deficiencies, the Examiner contends that Peters teaches that it is essential that the lens part has uniform dielectric constant throughout, and pre-expanded particles may be sieved to obtain improved uniformity of the molded lens part.

Turning to the prior art, Peters describes that granules of a thermoplastic are sieved into a narrow size range. Contrary to the Examiner's assertion, the particles are not expanded. The aim of the sieve is only to make the particle sizes uniform. Peters states in col. 4, line 72 – col. 5, line 1:

For high density inner shell the larger particles are employed since the expansion required is small, whereas for a low density outer shell the smaller particles are used since *after expansion such particles will still be small enough to permit uniform loading of the moulds (emphasis added)*.

The lens of Peters classifies granules by particle size, whereas in a completely unrelated application, the present claimed subject matter focuses on the dielectric constant of a foamed dielectric.

Furthermore, Peters only discusses separation by size. Peters is *silent* regarding forming pre-expanded beads that have been *classified by gravity separation*. An aspect of the Luneberg

lens of claim 1 is uniformity of the dielectric constant. Gravity separation was discovered by focusing on the uniformity of the dielectric constant. Peters is *silent* regarding the claimed dielectric constant, the purpose, and advantages of the claimed subject matter.

Peters fails to disclose a uniform concentration of fillers, as required by independent claim 6. As previously asserted, uniformity of the dielectric constant is an important aspect of the Luneberg lens of the claimed subject matter. Uniform concentration of fillers leads to the uniformity of the dielectric constant. Peters is *silent* to the designed concentration, the purpose, and advantages of the claimed subject matter.

Another aspect of claims 1 and 6 is that a foamed dielectric layer is formed using the pre-expanded beads that have been subjected to classification, and $f(A)$ represented by the following equation:

$$F(A) = \sigma a / A_{ave}$$

where σa is the deviation of a gas volume fraction A_r in the foamed dielectric layer and A_{ave} is the average of the gas volume fractions A_{rs} at positions in the foamed dielectric layer, satisfies the following expression:

$$0.0005 \leq f(A) \leq 0.1$$

The classification of the pre-expanded beads and forming of the foamed dielectric layer is performed to satisfy this condition. By satisfying this condition, a high-quality Luneberg lens which has not been obtained before can be provided. Peters is *silent* regarding molding the resulting pre-expanded beads on the condition that the concentration of the inorganic filler is within a range of $\pm 0.5\%$ with reference to the designed concentration, as required by claim 6.

As anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed, either expressly or inherently (noting that “inherency may not be established by

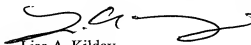
probabilities or possibilities,” *Scaltech Inc. v. Retec/Tetra*, 178 F.3d 1378 (Fed. Cir. 1999)), in a single prior art reference, *Akzo N.V. v. U.S. Int’l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), based on the forgoing, it is submitted that Peters does not anticipate claims 1 and 6, nor any claim dependent thereon. The dependent claims are allowable for at least the same reasons as claims 1 and 6.

Further, in order to establish a *prima facie* obviousness rejection under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. Further, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006). At a minimum, the cited prior art does not disclose (expressly or inherently) the above recited limitations.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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